

REMARKS/ARGUMENTS

Favorable reconsideration of the present application is respectfully requested.

Claim 1 has been amended for clarity and to provide antecedent basis for the “set of pins.” The “sets of pins are aligned randomly” limitation has been clarified to state that the “kinds of sets of pins are arranged randomly.” The scope of the claim remains substantially unchanged.

Claim 7 has been canceled. Claims 8 and 9 have been amended to delete the improper multiple dependencies. New Claims 10 and 11 are based on Claim 8, except for their dependencies.

New Claims 12-13 correspond to Claims 1-2, respectively, except for the “randomly” feature.

U.S. patent 5,728,021 (van Rooij et al) discloses a conventional power transmission chain having a plurality of links, each of which has front and back insertion parts 35 and 37 through which pins may be inserted. The front insertion parts 35 each have a fixed pin 45 and an interpiece 47 fitted therein. The back insertion parts 37 each have a movable pin 79 and an interpiece 45 fitted therein (Fig. 6). The respective pins and interpieces move in a rolling and contacting manner so as to enable longitudinal bending between the links. Van Rooij et al is designed to reduce the “chordal effect” which produces noise during operation. However, noise is not entirely eliminated in van Rooij et al (col. 1, last line: “‘chordal action’ is *nearly* absent”).

The present invention is based in part on the recognition that the level of the noise amplitude in the prior art results from the fact that all of the pins and interpieces engage in a rolling and contacting manner in the same way, so that the sound pressure level reaches a peak at the same frequencies for each of the links. This is illustrated in Figure 6 of the present specification. Therefore, in accordance with the invention, there are provided at least

two kinds of sets of pins randomly fitted in the links, in which loci of rolling contact movement of the first pin and second pin (e.g., pin and interpiece of van Rooij et al) are different in each of the kinds of sets of pins. By randomly providing one or another of the at least two kinds of sets of pins in the plurality of links, the frequencies where the sound pressure level peaks will occur will be dispersed and will not be the same for all of the sets of pins. The sound amplitude can thereby be further reduced.

According to another feature of the invention, this affect is enhanced by providing two or more different kinds of links having different pitches, and randomly arranging the links.

Claims 1, 2 and 6 were rejected under 35 U.S.C. §102 as being anticipated by van Rooij et al. Additionally, dependent Claims 3-5 were rejected under 35 U.S.C. §103 as being obvious over van Rooij et al. These rejections are respectfully traversed.

As already explained, van Rooij et al discloses a conventional transmission chain having a plurality of links with front and back insertion parts, wherein a pin and an interpiece are positioned in each of the insertion parts to contact one another in a rolling manner when the power transmission chain is bent. However, there is no teaching in van Rooij et al of at least two kinds of the sets of the pins and interpieces, in which loci of rolling contact movement of the pins are different in each of the kinds of sets of pins as is recited in Claims 1 and 12, nor is there a teaching in van Rooij et al of the recited random arrangement of one or another of the at least two kinds of sets of pins in the plurality of links, as is recited in Claim 1.

According to Applicants' understanding, the evidence relied upon in the Office Action for at least two kinds of sets of pins in van Rooij et al is the different reference numerals "45" and "79" used in the specification for the pins respectively provided in the front and back insertion parts. However, Applicants respectfully point out that the front and

back pins 45 and 79 are not described as having different shapes such that loci of rolling contact movement with the respective interpieces is different for each of these pins. Instead, it appears that the different reference numerals have simply been adopted to differentiate the pin 45 inserted in the first hole 35 versus the identical pin 79 inserted in the second hole 37. It is therefore respectfully submitted that Claims 1, 6 and 12 define over this prior art.

In any case, Claim 1 further recited that the sets of pins are aligned randomly, i.e., that “one or another of said at least two kinds of sets of pins are arranged randomly in said plurality of links.” The Office Action had evidently interpreted this to mean that the pins can be located at random positions in their respective holes.” It is respectfully submitted, however, that the present recitation that “one or another of said at least two kinds of sets of pins are arranged randomly in said plurality of links” clarifies that it is the selection of one or another of the kinds of sets of pins for a given link that is random, and not the position of the pins in their respective holes of the link. Even of the pins 45 and 79 in van Rooij et al were disclosed as having different shapes, their arrangement is alternate (i.e., 45, 79, 45, 79 ... etc.) and not random. For this reason as well, Claims 1 and 6 define over this prior art.

Claims 2 and 13 further recite that “one or another of said two or more kinds of links are arranged randomly in the power transmission chain.” The Office Action had relied on lines 60-62 of column 3 in van Rooij et al to teach this feature. The noted portion of van Rooij et al, however, merely describes that the pitch is reduced, not that one or another of two or more kinds of links having different pitches are arranged randomly in the power transmission chain. For this reason as well, Claims 2 and 13 also define over van Rooij et al.

Claim 3 defines the radius of the base circle of the involute curve of the locus of rolling contact. The Office Action deemed that van Rooij et al “teaches two different radii of two different pin’s loci of rolling contact movement.” This is evidently based on the aforementioned interpretation of the pins 45 and 79 having different shapes. However, since

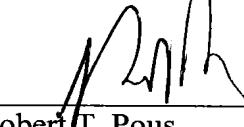
there is no evidence of this, there is no evidence that van Rooij et al teaches two different radii of two different pins loci of rolling contact movement.

With respect to Claims 4 and 5, the Office Action considered the particular numerical ranges recited therein to be a choice of design in the absence of evidence of criticality. Nonetheless, in view of the dependency of these claims from Claims 1 and 2, and the failure of van Rooij et al to teach or render obvious the subject matter of Claims 1 and 2, it is respectfully submitted that all of the claims define over the cited prior art.

Applicants believe that the present application is in a condition for allowance and respectfully solicit an early notice of allowability.

Respectfully submitted,

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